

# PATENT SPECIFICATION

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## PROVISIONAL SPECIFICATION.

### Improvements in or relating to Manhole Boxes and Covers or like Combinations.

We, ARCHIBALD FINLAY MACLAREN, a British Subject, and THE LUTON IRON FOUNDRY LIMITED, a British Company, both of High Town Works, Luton, Bedfordshire, do hereby declare the nature of this invention to be as follows:—

This invention relates to manhole boxes and covers or like combinations, such as for example are used to provide access to drains, and cable conduits. It is usual to sink the boxes into the road, so that the covers come approximately flush with the road surface.

In order to cope with the exceedingly heavy loads imposed upon the bearing surfaces between box and cover by modern traffic conditions, and further to prevent rocking of the cover, and consequent wear, it has been proposed to provide the cover with inclined, or wedge shaped bearing surfaces, resting on inclined, or wedge shaped seatings in the box.

It is to this type of box and cover that this invention has particular reference, although it is by no means limited to this type.

It has been observed in this type of box and cover that, owing to unavoidable discrepancies in casting, the co-operating wedging surfaces do not match up correctly. Hence, in use, considerable wear of these surfaces takes place, materially shortening the life of the components.

According to this invention we provide a box and cover having the bearing surfaces between said box and cover constituted wholly or in part by elements which are detachably secured to the body portion of the box or cover, or both.

According to another feature of this invention, the said bearing surfaces are constituted by resilient pads, (for example, of wood).

We may, in conjunction with the said detachable bearing surfaces, provide vertical surfaces (which may in some instances also be replaceable) in the form of dogs, to limit the movement of the cover in a horizontal plane. Further, the said detachable bearing surfaces may be disposed in pairs, the members of each pair converging together, as in the sides of a

wedge.

In one construction according to this invention as applied to a circular manhole box the flange of the cover is provided with several, say four, wedge-shaped downward extensions. Intermediate of the apex and base, each of the said downward extensions is provided upon its edges with a hard wood block. This wood block is forced into a recess in the said edge, and stands slightly proud.

The box is provided with corresponding inclined surfaces, upon which the cover is supported by means of the aforesaid blocks, of which in this instance there are eight. It will be observed that the slightly resilient properties of the wood allow the cover to seat itself properly, regardless of slight inaccuracies of manufacture, such as are unavoidable in a casting.

Furthermore, the blocks standing slightly proud of the converging edges of the four downward extensions on the cover, wear is restricted to the said blocks, which may be replaced at suitable intervals.

In another construction according to this invention, at the apex of each of the aforesaid downward extensions of the cover flange is provided a further downward extension, having substantially vertical edges, in the form of a dog, the said dog engaging on its sides in a suitable recess in the box. The function of these dogs is to prevent movement of the cover upon the box in a horizontal plane.

It will be observed that the life of a manhole box and cover, or the like, constructed according to this invention, is prolonged indefinitely, in that the surfaces at which wear takes place may be renewed from time to time. Further a good fit between the box and cover is always ensured, and in those specific constructions above mentioned, the tendency of the cover to tilt under an eccentrically applied load is eliminated.

Dated this 12th day of March, 1929.

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Chartered Patent Agents.

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## COMPLETE SPECIFICATION.

## Improvements in or relating to Manhole Boxes and Covers or like Combinations.

We, ARCHIBALD FINLAY MACLAREN, a British Subject, and THE LUTON IRON FOUNDRY LIMITED, a British Company, both of High Town Works, Luton, Bedfordshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to manhole boxes and covers or like combinations, such as for example are used to provide access to drains, and cable conduits. It is usual to sink the boxes into the road, so that the  
15 covers come approximately flush with the road surface.

In order to cope with the exceedingly heavy loads imposed upon the bearing surfaces between box and cover by modern traffic conditions, and further to prevent rocking of the cover, and consequent wear, it has been proposed to provide the cover with inclined, or wedge shaped bearing surfaces, resting on inclined, or wedge  
25 shaped seatings in the box.

It has been observed in such a box and cover that owing to unavoidable discrepancies in casting, the co-operating wedging surfaces do not match up correctly. Hence, in use, considerable wear  
30 of these surfaces takes place, materially shortening the life of the components.

It is known however that in prior constructional forms of manhole boxes and covers, other than those with interengaging wedge-like portions, that the box has  
35 been formed with equally spaced-apart recesses in which shock-absorbing cushions were secured.

40 With the upstanding portions of the cushions aforesaid engaged corresponding recesses in the underside of the cover, and the correct positioning of said recesses was effected by a locating lug on the box  
45 engaging a locating recess in the cover, said locating means also serving to prevent rotation of the cover.

The cushions aforesaid consisted of rubber, compressed paper, wood or other  
50 suitable material, and were so proportioned as to prevent contact with the bottom of the box and bring the top of the cover flush with the top of the box.

It is also known that the covers of manhole boxes have been formed with recesses  
55 in the vertical wall thereof to receive renewable inserts, of wood or other suitable

material, which projected beyond the face of the wall and fitted tightly against the face of the wall of the box.

60 The present invention provides a box and cover combination having inclined or wedge shaped bearing surfaces on the cover resting on inclined or wedge shaped seatings in the box, characterised in that  
65 each of the inclined bearing or seating surfaces of the box or cover, or both, is provided with one or more resilient elements which stand slightly proud of the surface in which they are affixed to form  
70 bearing surfaces.

The resilient elements are detachably secured to the inclined edges aforesaid, and such elements i.e. bearing surfaces, are constituted by resilient pads or blocks.

75 For a ready understanding of the said invention, reference is to be had to the following description and accompanying drawing, which is a side elevation, partly in section of a circular manhole and its cover in accordance with the present invention.

In carrying out the invention, the flange of the cover 1 is provided with several, say four, downwardly extending wedge-shaped portions 2, and the manhole box 3 is provided with corresponding upwardly extending wedge-shape portions 4. Intermediate of the base and upper part of each wedge 4 and in the inclined edges 5 thereof, there is provided a hard wood block or pad 6 which is forced into a recess 7 in the edge 5, the surface 8 of the block or pad 6 standing slightly proud of the edges 5 aforesaid.

85 The cover 1, when lowered, rests, by the inclined underfaces 9 of wedges 2, upon and is supported by the surfaces 8 of the blocks or pads 6. The cover 1 has a downwardly depending locating lug or pin 10 which engages in the locating  
90 recess 11 in the manhole 3, the pin 10 and recess 11 by their interengagement serving also to prevent rotation of the cover 1.

It is readily understood that the resilient properties of the wood blocks or pads 6 allow of the cover 1 properly seating itself, regardless of slight inaccuracies of manufacture, such as are unavoidable in a casting.

105 Further, owing to the surfaces 8 of the blocks 6 standing slightly proud of the edges 5 of the wedges 4 of the manhole 3, wear is restricted to said blocks or pads 6,

which may be replaced at suitable intervals as and when required.

Although the resilient wood blocks or pads 6, have been described as applied to the box 3 only, it is to be understood that said blocks or pads may be equally well applied to the inclined edges 9 of the wedges 2 of the cover 1, additional to or in place of those in the box 3, and also that each edge 5 may carry more than one block or pad 6.

Alternatively, the resilient blocks or pads 6 may extend along the whole length of the inclined edges of the box or cover or both.

From the foregoing description it will be appreciated that the life of a manhole box and its cover, or the like, constructed in accordance with the invention, is prolonged indefinitely, in that the surfaces on which wear occurs can be renewed from time to time. Moreover a good fit between the cover and box is always ensured, and the tendency of said cover to tilt under an eccentrically applied load is eliminated.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

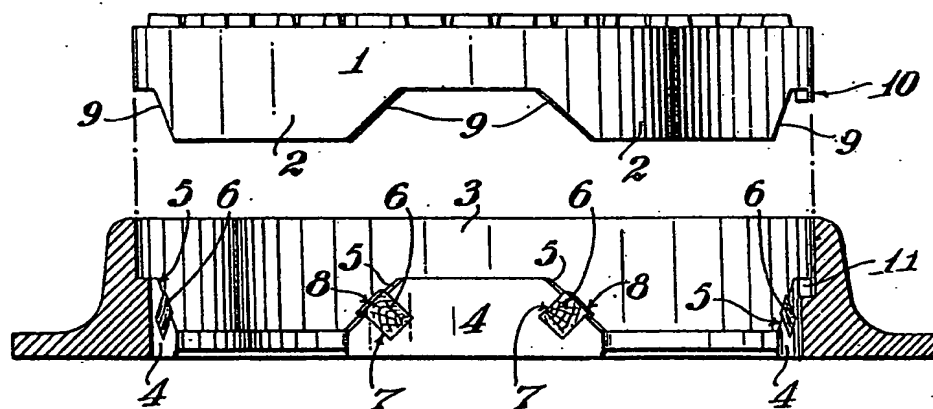
1. Manhole boxes and covers or like combinations wherein the cover is provided with inclined or wedge-shaped bearing surfaces resting on inclined or wedge-shaped seatings in the box, characterized in that each of the inclined bearing or seating surfaces of the box or cover, or both, is provided with one or more resilient elements which stand slightly proud of the surface in which they are affixed to form bearing surfaces.

2. Manhole boxes and covers or like combinations as in claim 1, wherein the inclined edges of the wedge-shaped portions of the box are each, intermediate of the base and upper part of a wedge, provided with a recess for the reception of a removable resilient pad or wood block, of a depth to cause the said pads to stand slightly proud of the said inclined edges.

Dated this 10th day of December, 1929.

KINGS PATENT AGENCY LIMITED,  
By BENJ. T. KING,  
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*[This Drawing is a reproduction of the Original on a reduced scale.]*



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